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CATCH OF POLLOCK IN ADF&G CRAB TRAWL SURVEYS
AROUND KODIAK ISLAND, 1987-89

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CATCH OF POLLOCK IN ADF&G CRAB TRAWL SURVEYS
AROUND KODIAK ISLAND, 1987-89

This report presents a comparison of pollock catch rates in recent years in ADF&G trawl surveys with the 1987 NMFS bottom trawl survey. It also contains a memo on the same subject, dated December 2, 1988.

The otter trawl used in ADF&G surveys was rigged to catch crab (the vertical mouth opening was only 5 feet). In addition, the area surveyed was chosen for crab stock assessment, thus it lies nearer shore than the NMFS survey, and does not get into some of the richest pollock grounds. The trawl was a 400 mesh Eastern otter trawl, with a 70 ft. headrope, and a 95 ft. long footrope, without ticklers or rollers. Dandylines were 25 fms long.

Data from the surveys was stratified by Tanner Crab District (Fig. 1). NMFS data for 1987 were used if the data were in the same geographic and depth ranges as fished in the crab surveys. Cut off values for selecting comparable tows from the NMFS survey were: between 151 degrees and 156 degrees 5 min of longitude and south of 58 degrees 50 min of latitude, and 200 fathoms or shallower.

RESULTS

FLCatches in each Kodiak district are shown in tables 1-4 for the four surveys. Size of pollock caught during the 1988 and 1989 surveys are shown in Figure 2.

ADF&G surveys indicated a 68% increase in catch per mile between 1987 and 1988, and a 3% decline between 1988 and 1989. There is a continued increase in the catch rate in the North East district, a decline in the South East and East Side districts, and a modest increase in the Shelikof and South West districts.

The size frequencies (Fig. 2) do not show significant numbers of juvenile fish. This is common for this gear. In ADF&G surveys conducted since 1980, it is common for pollock less than 30 cm to be a very small portion of the catch. Pollock less than about 30 or 35 cm are not fully recruited to the gear, and their catch varies considerably between years.

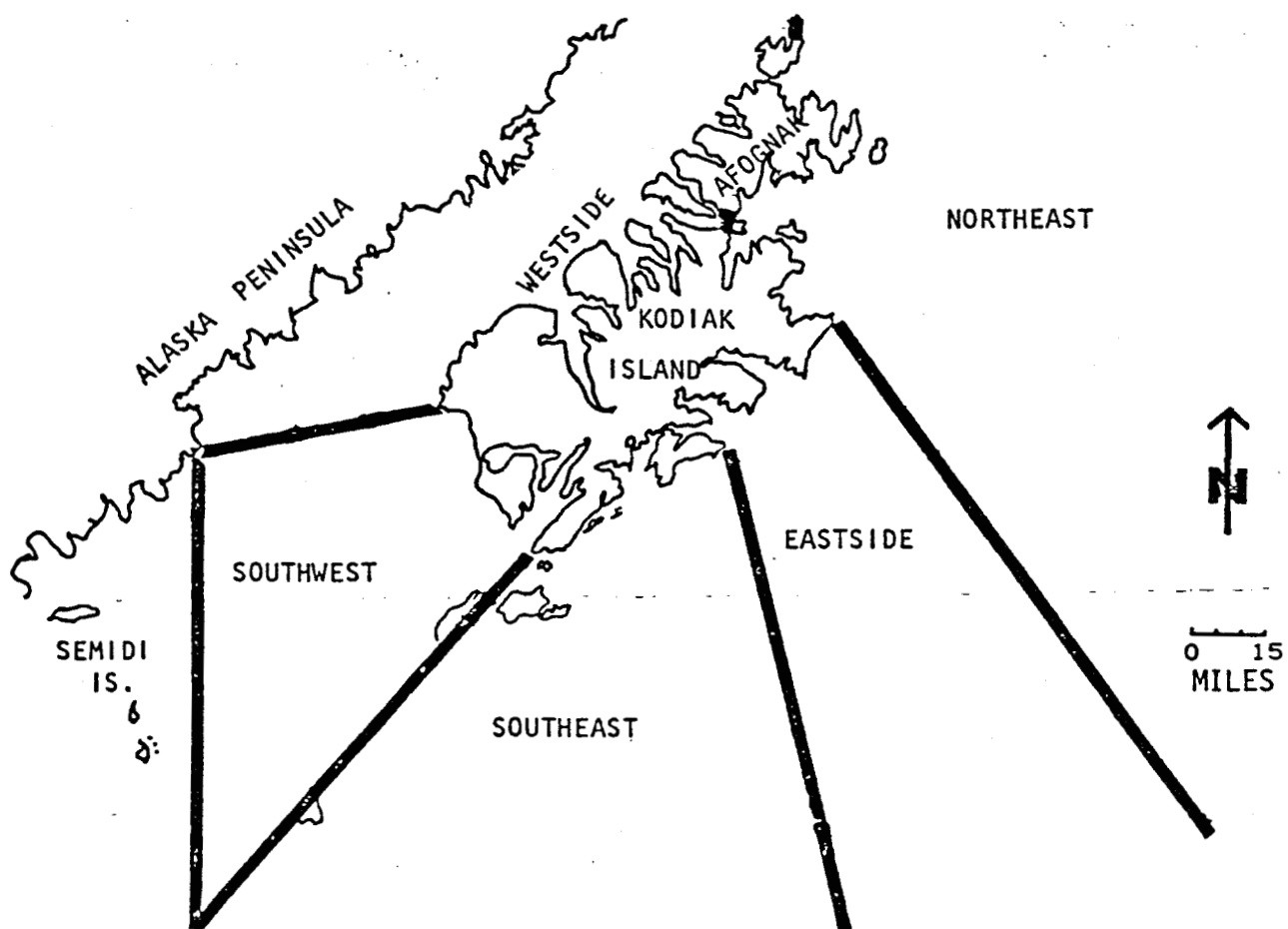


Figure 1. Kodiak districts (Tanner crab).

Table 1. Mean catch in kilograms of pollock per nautical mile during the 1987 ADF&G trawl survey in the Kodiak area, by depth with number of hauls below.

District	-----DEPTH (fm)-----			Total
	<50	51-100	101-200	
Shelikof	248.1 5	124.1 38	89.1 17	124.5 60
South West	262.2 11	195.1 9	14.2 10	159.0 33
South East	0	91.9 31	0.0 2	86.3 33
East Side	168.2 9	372.1 21	0	310.9 30
North East	0.9 4	352.7 30	0.0 1	302.4 35
Total	194.6 29	214.8 129	55.2 30	186.2 188

Table 2. Mean catch in kilograms of pollock per nautical mile during the 1988 ADF&G trawl survey in the Kodiak area, by depth with number of hauls below.

District	-----DEPTH (fm)-----			Total
	<50	51-100	101-200	
Shelikof	127.7 12	134.4 38	61.1 8	122.9 58
South West	120.0 29	111.4 7	18.8 4	108.4 40
South East	8.4 6	647.4 31	170.5 1	534.0 38
East Side	136.4 14	734.1 26	0	524.9 40
North East	101.2 8	514.7 26	65.5 3	388.9 37
Total	112.8 69	456.4 128	58.2 16	315.2 213

Table 3. Mean catch in kilograms of pollock per nautical mile during the 1989 ADF&G trawl survey in the Kodiak area, by depth with number of hauls below.

District	-----DEPTH (fm)-----			Total
	<50	51-100	101-200	
Shelikof	243.1 10	210.6 40	97.2 8	199.8 58
South West	277.4 28	335.3 9	4.0 3	268.6 40
South East	98.7 5	320.3 33	54.0 2	280.7 40
East Side	346.0 13	258.9 27	0	286.3 40
North East	227.0 6	664.8 29	49.0 2	561.5 37
Total	267.6 62	349.3 138	66.6 15	306.2 215

Table 4. Mean catch in kilograms of pollock per nautical mile during the 1987 NMFS trawl survey, by depth with number of hauls below.

District	-----DEPTH (fm)-----			Total
	<50	51-100	101-200	
Shelikof	143.1 13	44.3 17	101.6 13	83.2 43
South West	280.4 20	193.8 6	25.2 6	161.0 32
South East	17.6 17	106.5 19	21.8 16	60.4 52
East Side	2850.0 21	1110.9 85	32.0 4	1210.4 110
North East	21.8 11	304.3 25	204.9 5	268.9 41
Total	843.2 82	687.6 152	74.8 44	586.6 278

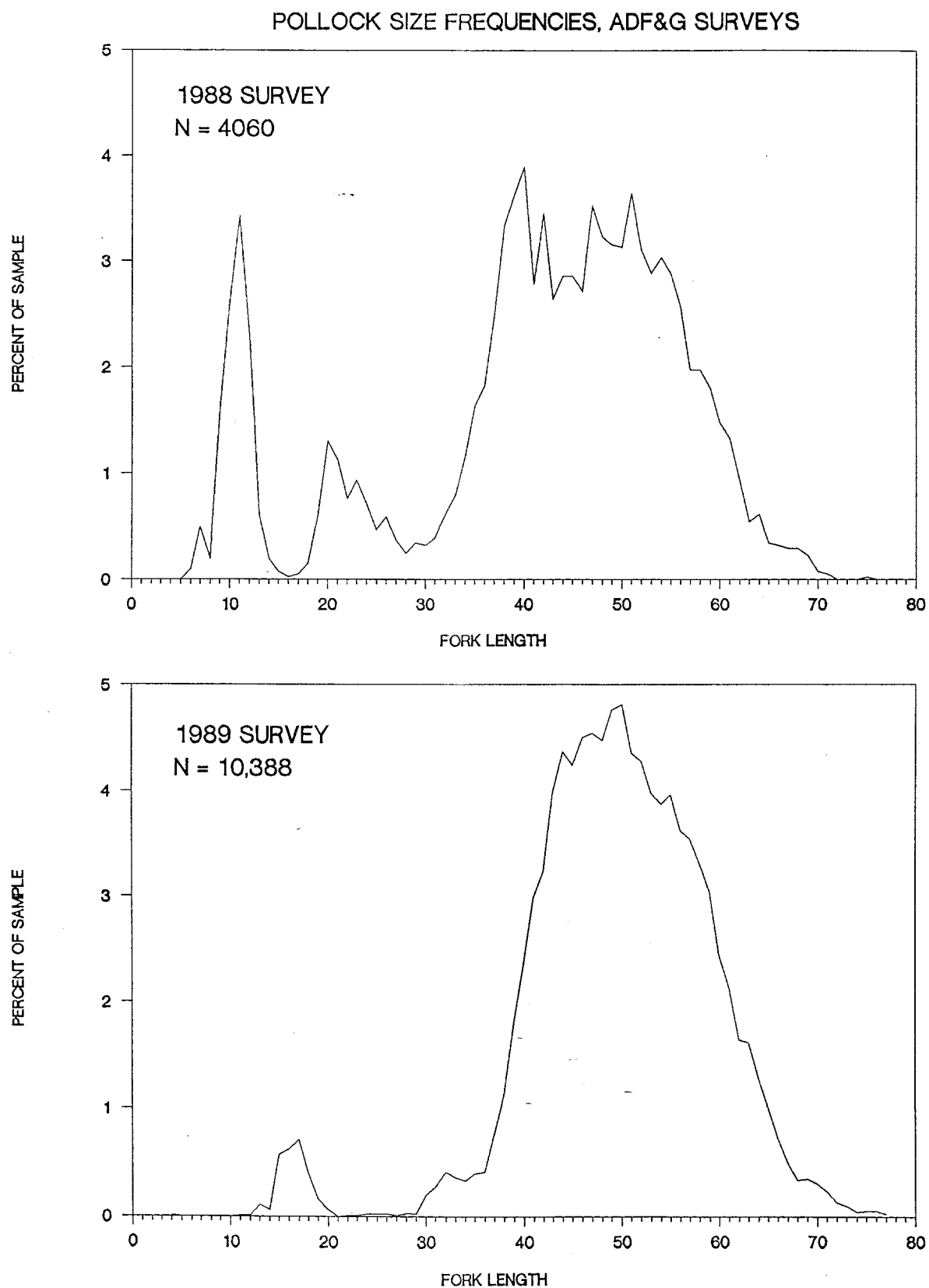


Figure 2. Size distribution of pollock caught around Kodiak Island during ADF&G's crab survey in 1988 and 1989.

MEMORANDUM

STATE OF ALASKA

To: NPFMC Scientific and Statistical
Committee

December 2, 1988
File: 15polmemo

From: Jim Blackburn, Peter Craig
Alaska Dept. Fish and Game
211 Mission Rd.
Kodiak, Ak 99615

Subject: Comparison of 1987 and 1988 pollock catches in ADF&G
crab trawl surveys around Kodiak Island

This memo presents catch rates of pollock in 3 bottom trawl surveys around Kodiak Island: (a) the NMFS tri-annual survey in 1987, and (b) ADF&G's crab surveys 1987 and 1988.

It should be noted at the outset that the otter trawl used in the crab survey was rigged to catch crab (the vertical mouth opening was only 5 feet), thus pollock catches were predictably lower than those caught by the NMFS trawl. The crab trawl had a 70 ft headrope, 95 ft footrope without rollers or ticklers.

Data from the crab surveys were stratified by Tanner Crab District (Fig. 1). NMFS data for 1987 were used if the data were in the same geographic and depth ranges as fished in the crab surveys. Cut off values were: between 151 degrees and 156 degrees 5 min of longitude and south of 58 degrees 50 min latitude, and 200 fathoms or shallower.

All surveys had widespread coverage in the Kodiak area (Fig. 2).

RESULTS

Catches in each Kodiak district are shown in Tables 1-3 for the 3 surveys. Sizes of the pollock caught during the 1988 crab survey are shown in Figure 3.

The ADF&G crab surveys indicate a 68% increase in the biomass of pollock from 1987 (186 kg/n mi) to 1988 (315 kg/n mi). While there was little change in Shelikof Strait, pronounced increases were apparent on Kodiak's east side (Fig. 4). An inspection of Tables 1 and 2 shows that most of this difference occurred at the 51-100 fm depth zone for the 3 east side districts.

Statistical comparison. The frequency distribution of the trawl data was highly skewed (reverse "J" shape), with many 0 catches of pollock and progressively fewer higher catches. Therefore, the cumulative relative frequency distributions ("empirical

cumulative distribution functions") of the 1987 and 1988 surveys were compared and tested by the Kolmogorov-Smirnov two-sample test (Fig. 5). The results were significantly different for both the entire sample ($P < 0.005$) and the 51-100 fm depth zone for the 3 eastside districts ($P < 0.002$). Overall, catches in 1988 were higher than in 1987.

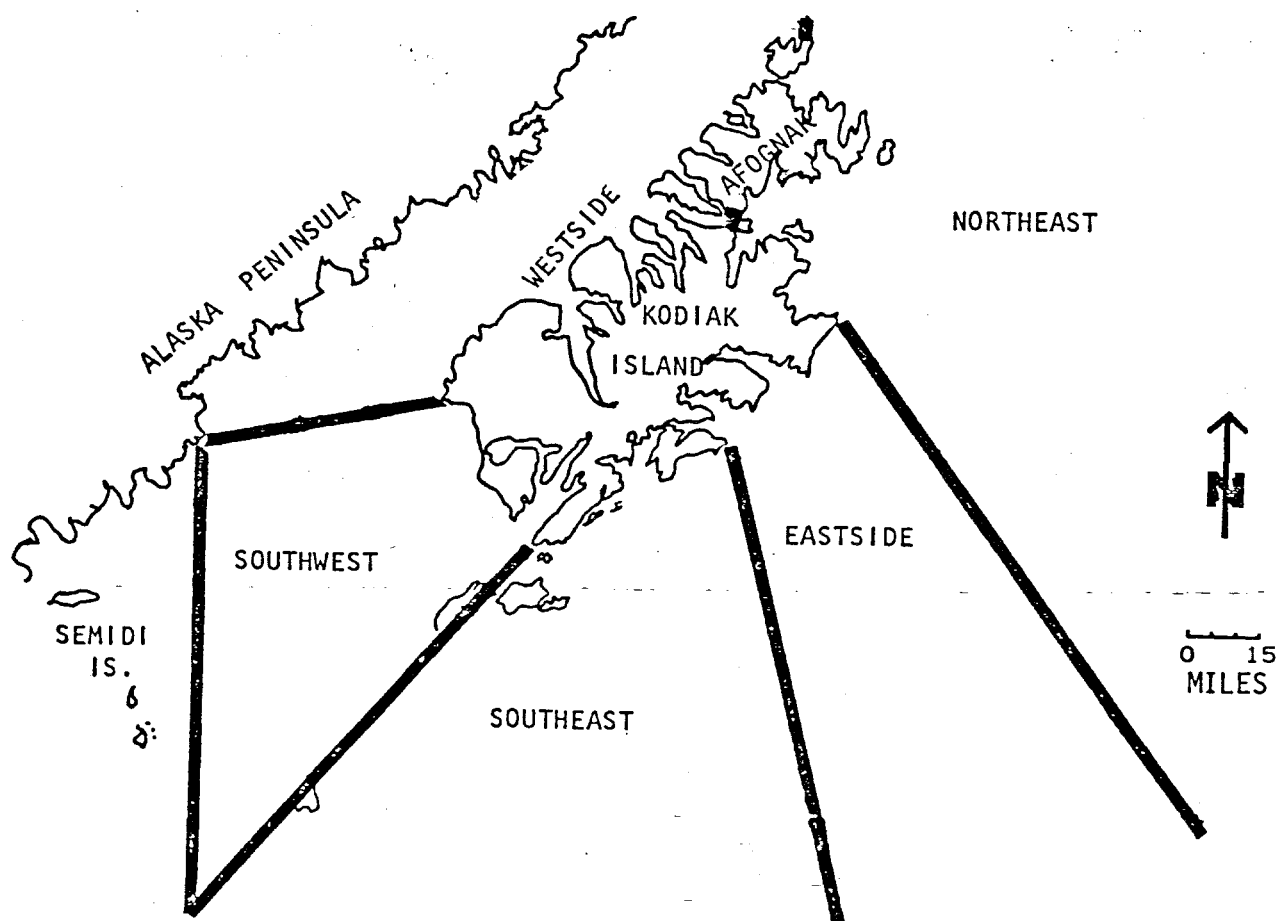


Figure 1. Kodiak districts (Tanner crab).

Tow Locations, 1987 Crab Trawl Survey

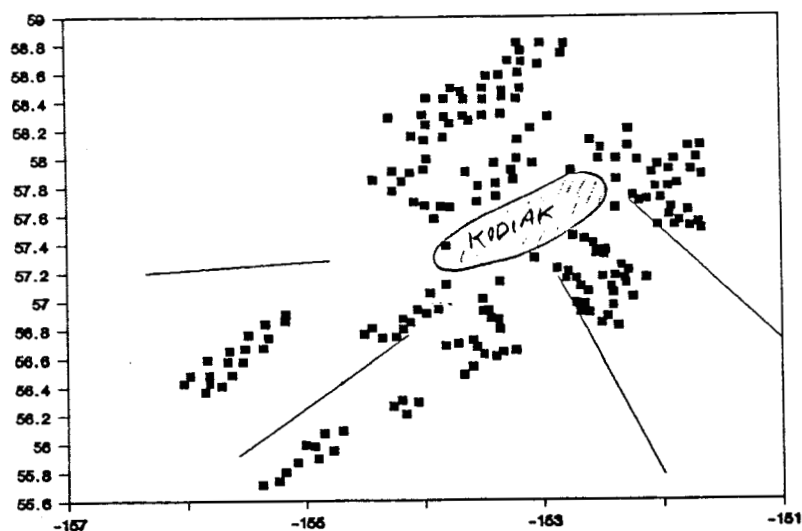
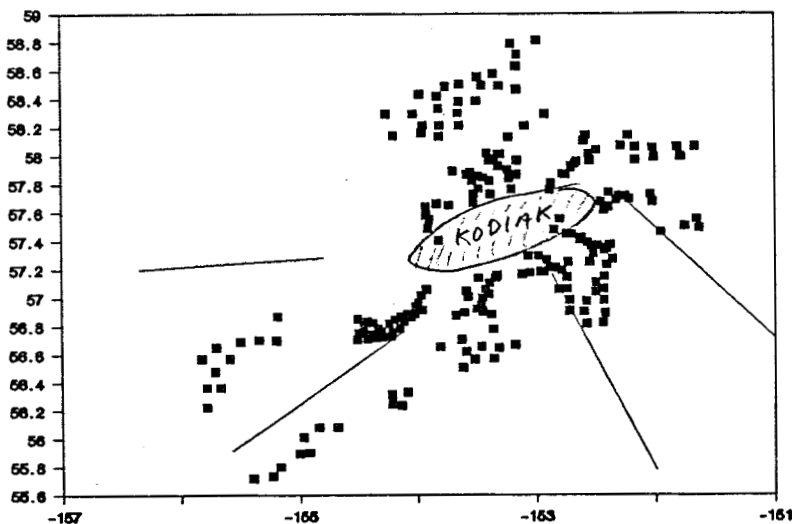
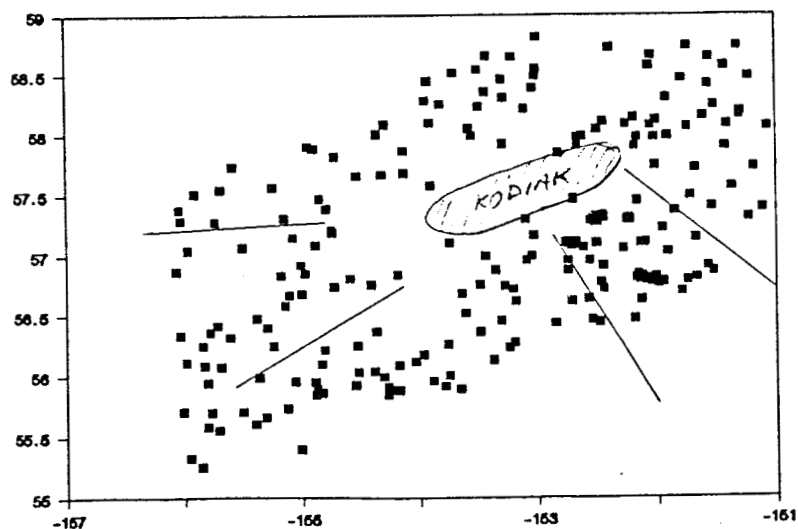


Figure 2.
Trawl locations of
ADF&G crab surveys
in 1987 and 1988,
and the NMFS
tri-annual survey
in 1987.

Tow Locations, 1988 Crab Trawl Survey



NMFS Trawl Locations Used, 1987



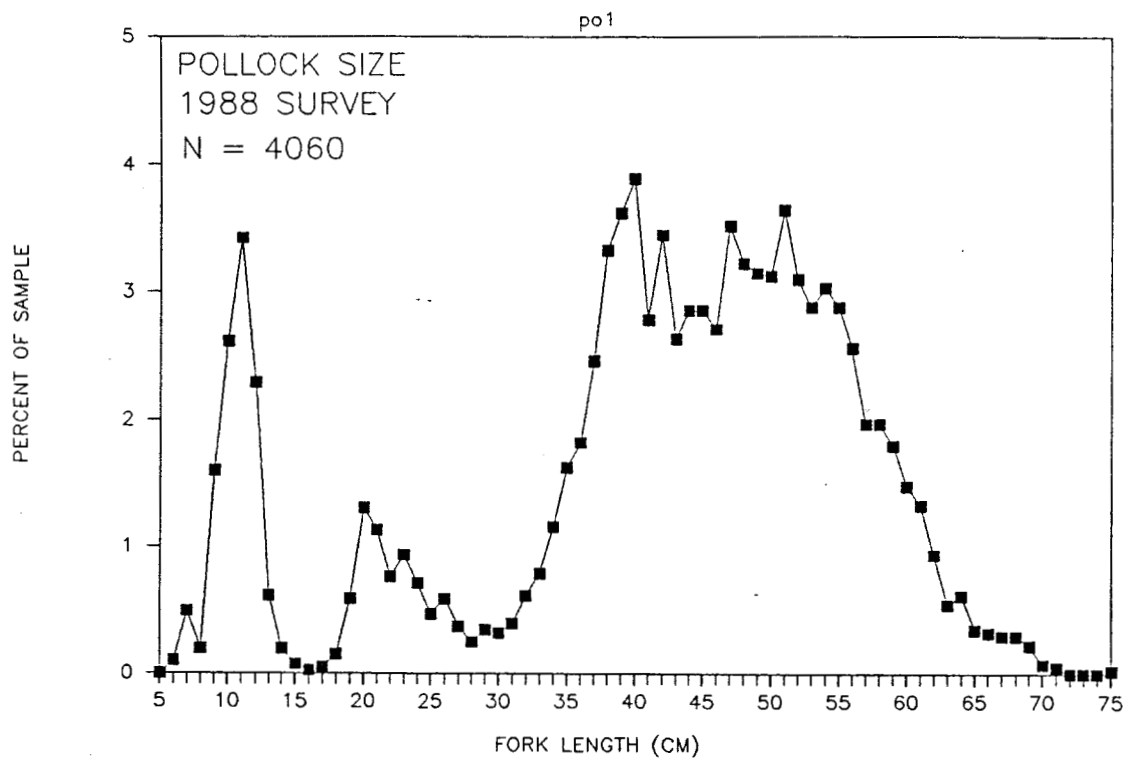


Figure 3. Size distribution of pollock caught around Kodiak Island during ADF&G's crab survey in 1988.

POLLOCK IN ADF&G
CRAB SURVEY,
1987 and 1988

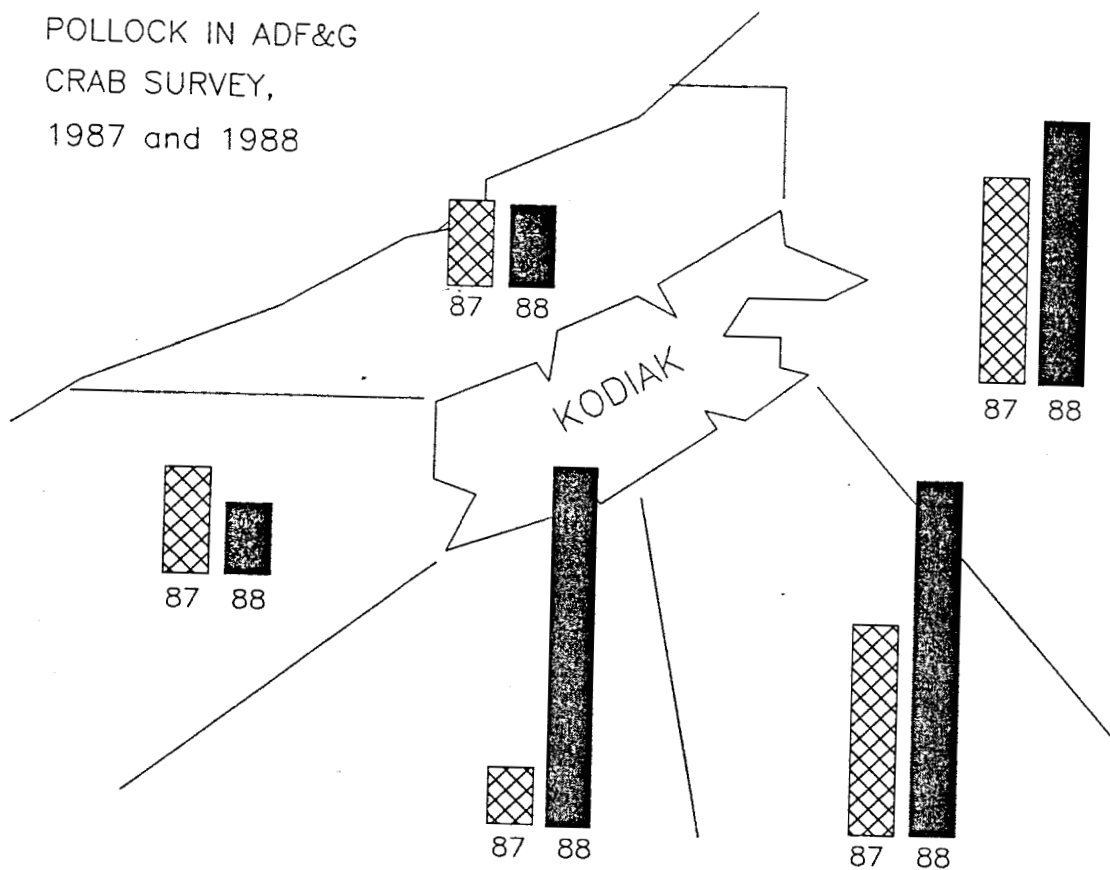


Figure 4. Comparisons of pollock catches in ADF&G's crab surveys around Kodiak Island in 1987 and 1988. Bars indicate the relative abundance of pollock (kg per nautical mile) based on a total of 188 tows in 1987 and 213 tows in 1988. Data are from Tables 1 and 2.

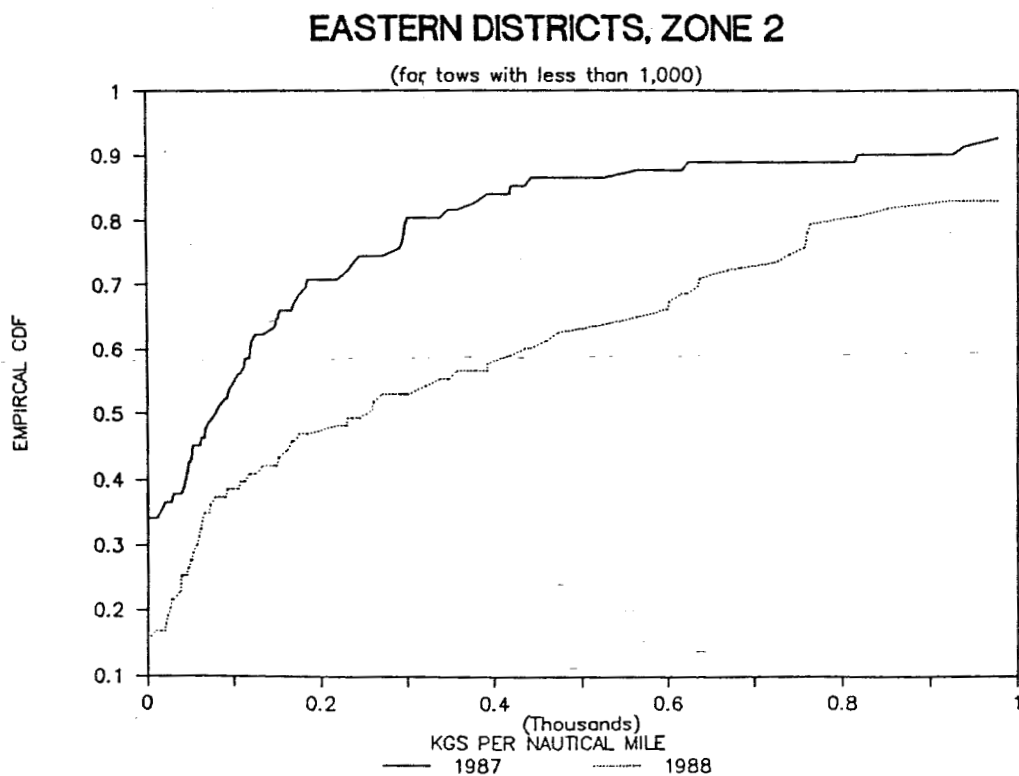
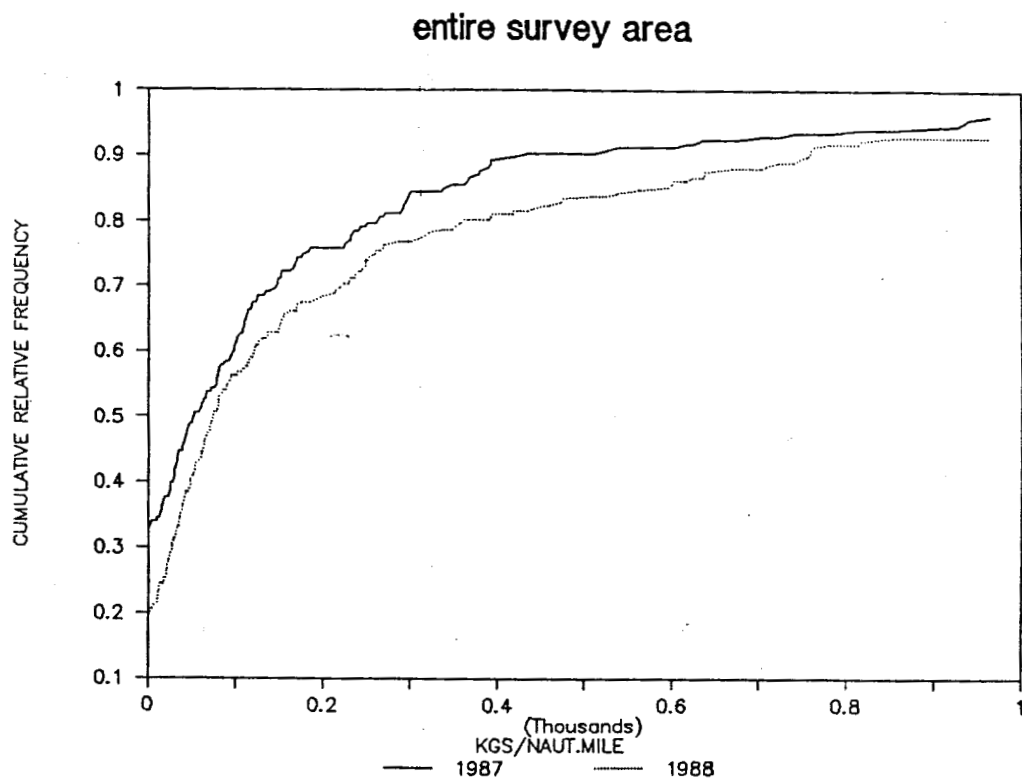


Figure 5. Comparison of cumulative distribution functions (CDF) for the 1987 and 1988 ADF&G surveys for (a) all areas combined (top), and (b) the 51-100 fm depth zone of the eastside districts (bottom).

TABLE 1. Mean catch in kilograms of pollock per nautical mile on the 1987 ADG&G crab survey, with number of hauls below.

District	DEPTH (fm)			Total
	<50	51 - 100	101 - 200	
Shelikof	248.1 5	124.1 38	89.1 17	124.5 60
South West	262.2 11	195.1 9	14.2 10	159.0 33
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TABLE 2. Mean catch in kilograms of pollock per nautical mile on the 1988 ADF&G crab survey, with number of hauls below.

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Total	112.8 69	456.4 128	58.2 16	315.2 213

TABLE 3. Mean catch in kilograms of pollock per nautical mile during the 1987 NMFS survey, with number of hauls below.

District	DEPTH (fm)			Total
	<50	51 - 100	101 - 200	
Shelikof	143.3 13	44.3 17	101.6 13	83.2 43
South West	280.4 20	193.8 6	25.2 6	161.0 32
South East	17.6 17	106.5 19	21.8 16	60.4 52
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North East	21.8 11	304.3 25	204.9 5	268.9 41
Total	843.2 82	687.6 152	74.8 44	586.6 278

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If you believe you have been discriminated against in any program, activity, or facility, or if you desire further information please write to ADF&G, P.O. Box 25526, Juneau, AK 99802-5526; U.S. Fish and Wildlife Service, 4040 N. Fairfax Drive, Suite 300 Webb, Arlington, VA 22203 or O.E.O., U.S. Department of the Interior, Washington DC 20240.

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